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ENVIRONMENTAL IMPACT ASSESSMENT

HISTORIC RESOURCES

ROSS BAY JUNCTION - CHURCHILL FALLS TOTE ROAD

TRANSPORTATION

GOVERNMENT OF NEWFOUNDLAND & LABRADOR

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
DEPARTMENT OF TRANSPORTATION

Office of the Minister
Telephone 737-3641

ST. JOHN'S

File No. PR/71

MAR 11 1986

Honourable John Butt, M.H.A.
Minister,
Department of Environment
Elizabeth Towers
100 Elizabeth Avenue
St. John's, NF
A1C 5T7

Dear Colleague:

RE: Historic Resources Component Report - Ross Bay Junction to Churchill Falls Tote Road Environmental Assessment

In accordance with Section 9 (10) of the Environmental Assessment Regulations, 1984, I am enclosing twenty-five (25) copies of the Historic Resources Component Report for the Ross Bay Junction to Churchill Falls Tote Road Environmental Assessment. This report was prepared by Hardy Associates (1978) Limited.

The views and recommendations presented herein are those of the consultant and do not necessarily reflect the policies and procedures of the Department of Transportation.

The information contained in this report relates specifically to the Historic Resources Component. There are six (6) additional component studies as well as an Environmental Impact Statement. Any views or comments which are expressed about this report should consider the other component studies and moreover, the Environmental Impact Statement which, in addressing the overall environmental impacts of the proposed project as documented in the component studies, will provide the clear statement of the policies and procedures of the Department of Transportation with respect to this project.

(...../2)

My department looks forward to your review and examination of this report.

If you have any questions, please do not hesitate to contact me or my staff.

Sincerely,

RON DAWE
MINISTER OF TRANSPORTATION

/dm
Enclosures

NEWFOUNDLAND ENVIRONMENTAL
CONSULTANTS LIMITED

March 27, 1986

Mr. C. Roger Pottle
Planning and Research Division
Department of Transportation
Government of Newfoundland and Labrador
Atlantic Place
215 Water Street
St. John's, Newfoundland
A1C 5T7

Dear Mr. Pottle:

Herewith please find our final component report, "Historic Resources" of the Ross Bay Junction to Churchill Falls Tote Road Environmental Impact Study. Following you and your colleagues' most helpful reviews and discussions, we have adjusted the report as necessary to conform with your suggestions.

It has been a privilege to work for the Department of Transportation. We thank you for the opportunity.

Sincerely yours,

Dr. C.M. Hawkins

36 PIPPY PLACE, ST. JOHN'S, NEWFOUNDLAND A1B 3X4 (709) 722-4777

ROSS BAY JUNCTION - CHURCHILL FALLS TOTE ROAD

EVALUATION OF HISTORIC RESOURCES

Prepared by: Gerald Penney, M.A.
Archaeologist

For: Hardy Associates (1978) Ltd.

St. John's, March, 1986

EXECUTIVE SUMMARY

Introduction

Man's heritage lies in the material of archaeology and general interest in our past heritage is dramatically demonstrated by the increasing sale of books and films; the founding of local museums and visits to historic sites. In Newfoundland and Labrador an "Act Respecting the Preservation of the Historic Resources of the Province" was given Royal Assent on December 10, 1985. This Act acknowledges that many of the Province's prehistoric, historic and palaeontological sites could be threatened unless archaeological investigators are co-ordinated with development schemes.

This component study is concerned with the potential affects of highway construction and uses on historic resources important to our understanding of past events. Its unit of investigation is the archaeological site.

Key Indicators

Archaeological sites are areas of past human activity or occupation and may only involve a single artifact, structural remains or the remains of a village or community. Sites are classified by age into prehistoric (occupation of the land before Europeans), historic (after contact ca 1500 AD to the present) or palaeontological (fossilized remains).

Prehistoric sites are extremely fragile and once damaged their scientific value is permanently lost or impaired. They are a non-renewable resource and are restricted in their

distribution. An example of a prehistoric site would be the Maritime Archaic cemetery at Port au Choix, however, most are seasonal hunting camp sites.

Historic sites relate to the exploration and occupation of the land by Europeans and is marked by the arrival of European manufactures goods, permanent buildings and the maintenance of records. Historic sites include: ethnographic (Innu) sites which contain European manufactured goods, fur trade posts, trapper cabins (Innu and European), missionary and explorer campsites.

Palaeontological sites hold the remains of fossilized living organisms. In one Canadian location, Old Crow Flats in the Yukon, human artifacts have been found in association with the fossilized remains of extinct Pleistocene megafauna.

Impacts of Road Development: Types

Any highway construction and use may have adverse direct or indirect impacts on historic resources. An historic resource impact may be broadly defined as the net change between the condition or integrity of the type sites outlined above 'with' and 'without' the proposed project.

Direct primary impacts are the immediately demonstrable effects of physical road construction. Examples of direct impacts are borrow pit activities, bulldozing (blade down), ditching, grading and construction of camp sites.

Indirect or secondary impacts result from activities other than actual development actions. They are, however, brought

about by the project, and would not occur without it. The erosion of a site downstream as a result of the alteration in the normal flow pattern of a river is a secondary impact.

Survey Results (Resources in Corridors)

No prehistoric sites were uncovered during sub-surface testing on the proposed route nor was any site visible on surface of either route. A foot survey, supplemented by random sub-surface testing, of 24 stream crossings and five major intersecting eskers (p. 18-20) on the proposed and alternate routes failed to locate prehistoric sites.

One historic site (p. 20) was located at stream crossing number 14 on the proposed route.

Secondary evidence of man in the study area is demonstrated by axe chopped trees at six locations (p. 20-22) on the proposed route and at four stream crossings on the alternate route.

Mitigation

No adverse impacts on historic resources are envisaged to occur within the corridors of either the proposed or alternate routes of the Labrador Tote Road.

Monitoring

A monitoring program is recommended throughout the construction period of the road. Historic Resources education seminars directed at the management and field workers of the successful bidding construction companies should make them sensitive to possible resources within the study area (p. 24).

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1.0 INTRODUCTION

The Department of Transportation, Government of Newfoundland and Labrador, has plans to construct a road linking towns in western Labrador with Churchill Falls and Goose Bay. This report evaluates the historic resources potential of both its proposed and alternate routes within a five km wide corridor centred on a preliminary alignment for both routes.

A primary research objective was the establishment of a subsistence/settlement system emphasizing site location, site characteristics and artifact variability. Research was conducted following a Terms of Reference (appended) and written following guidelines established by the Historic Resources Division of the Provincial Department of Culture, Recreation and Youth (1982). It includes a description of the project and study area, employed methodology, a summary of results, impact identification and assessment, and outlines mitigative measures. A bibliography dealing with references to Montagnais-Naskapi use and occupancy of the study area is appended.

2.0 PROPOSED DEVELOPMENT PROJECT

The Ross Bay Junction to Churchill Falls Tote Road will connect towns in Labrador West (Wabush and Labrador City) and Churchill Falls (Figure 1). The routes under study are:

(a) Ross Bay Junction to Churchill Falls, the proposed route, which will entail 130 km of new construction.

(b) Ross Bay Junction to Churchill Falls via Esker, the alternate route, will see 90 km of new construction and upgrading of 100 km.

Lake
Colville Lake
Way Bay

ROSS BAY JUNCTION-CHURCHILL FALLS

TOTE ROAD

ENVIRONMENTAL IMPACT ASSESSMENT

ROUTES

PROPOSED

ALTERNATE

FIGURE 1

SCALE 1:400,000

0 5 10 15 20 KM

DATE:

CONSULTANT ARDY AS 12th 1978

TRANSPORTATION

2.1 Road Standards

On the selected route, the horizontal alignment will be designed to an RCU80 (Rural, Collector, Undivided, 80 km/h) standard. The minimum radius of curves will be 230 m with a maximum profile grade of 5% to 8% for this class of road. The profile grade will generally be 6% with a few grades of 8%.

The road right of way will be 40 m wide within which a 20 m wide area will be cleared and close cut. Close cutting will retain the roots of the existing vegetation cover and minimize erosion of the original ground.

The road will be constructed with a minimum fill depth of 500 mm and a width of 9.0 m. This will be supplemented by a 500 mm deep by 6 m wide granular driving surface as required in areas where the road base is unstable.

Where excavation is necessary the original ground will be stripped of topsoil and vegetation before excavation and the excavated material, if suitable, used in fill areas.

Adjacent to natural water courses, drainage of water along the right of way will be accomplished by ditches excavated parallel to the toe of the road slope. Water will then be directed to natural water courses after passing through vegetated areas.

Major streams or rivers will be crossed by constructing concrete bridges as required. Bridge crossings are anticipated at the following locations on the proposed route:

(a) Miron River (km 85)

(b) Unnamed River (km 138)

(c) Ossokmanuan Lake (km 160)

and at the following locations on the alternate route:

(a) Miron River (km 86)

(b) Bernadette River (km 103)

(c) Evening River (km 121)

(d) Wide River (km 130)

(e) No Name River (km 147)

2.2 Construction Planning

Construction operations will be influenced by the location of borrow material since the project is primarily in fill. A common source of acceptable fill may be found in the granular deposits known as eskers. These deposits are found at Ross Bay Junction km 68, on the proposed route at km 110, km 158 and km 174, and on the alternate route at km 138, and km 147 (Figs. 3 & 4). Some of these borrow sites can be used for construction camps. In addition areas of hummocky moraine, as found at various locations, may contain acceptable borrow material.

The initial construction contracts will be about 20 km in length. Construction contracts for the proposed route will be from km 68 - 92 (1986), km 92 - 110 (1987) and km 110 - 153 (1988 - 1990). Future contracts would run from km 153 - 174 and km 174 - 199. Construction camps for the proposed route could be located at km 68, km 110, and km 174.

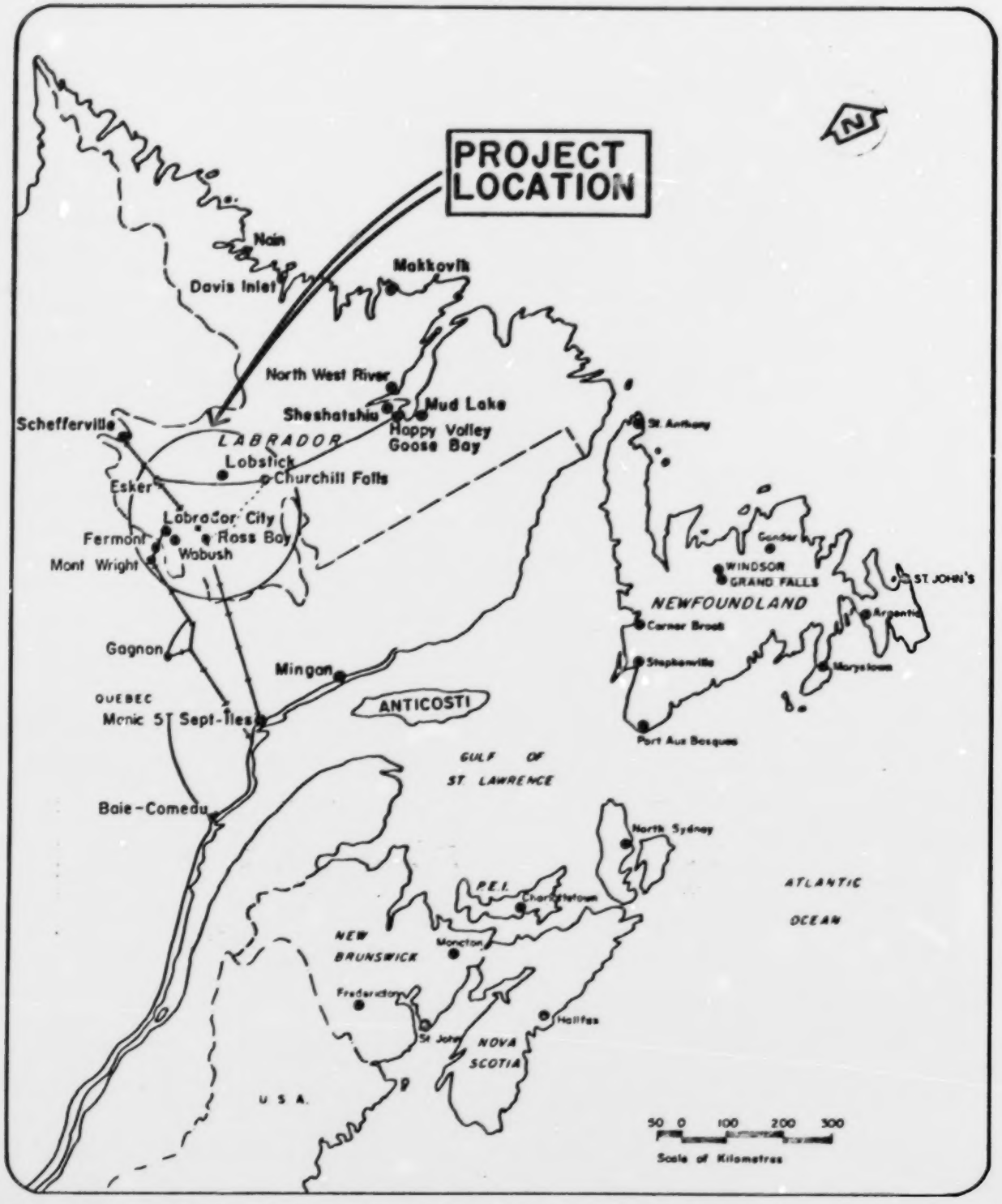
The alternate route will be divided into contracts from km 68 - 92 (1986), km 138 - 157 (1987) and km 92 - 138 (1988 - 1990) with construction camps at Ross Bay Junction km 68, km 138 and km 157.

3.0 PROJECT AREA

The project area is bounded to the south by the height-of-land and such south flowing rivers as the Moisie and Romaine which have their headwaters here (Figure 1A). To the west is the Ashuanipi River system, flowing south to north, which rises in the southwest corner of Labrador flows through Ashuanipi and Menihek Lakes into Lake Petitsikapau and eventually into the man-made Smallwood Reservoir. These two river systems are today, as they were during the historic period and possibly the prehistoric period, summer travel routes between the coast and the interior.

Louis Jelliet (Cooke 1964:140) indicated Lake Ashuanipi as the home of the "Les Cunesk api." Hudson Bay Company employees Earlandson and Maclean (Davies 1963) skirted the northern boundary (Sandgirt Lake) of the study area during their trek between Fort Chimo and Northwest River. Near Lobstick Lake they "saw traces of the Sisauchie (Sheshatshiu?) Indians . . ." (Davies 1963:253).

An emphasis on westward expansion by both the Hudson Bay Company and the North West Trading Company during the 18th and 19th centuries meant that much of the Labrador Peninsula was left untouched. Davies (1963:XXIV) comments that "the interior



ROSS BAY JUNCTION – CHURCHILL FALLS TOTE ROAD

FIGURE 1A STUDY AREA

TRANSPORTATION

of that inhospitable region held out little prospect of gain to encourage serious exploitation." Leacock (1954:14) observed that westward expansion "left central and eastern Labrador to be explored but sporadically until late into the 19th century."

The Innu of Labrador and Quebec, today totalling almost 9,000 people, are based in the communities of Davis Inlet, Sheshatshiu, St. Augustin, La Romaine, Natashquan, Mengan, Sept-Iles/Malistenan, Scheffeville, Bersimis, Les Escoumins, and Pointe Bleue. The culture of the Innu is adapted to life in the boreal forest of northern Canada and is primarily based on large mammal hunting and the exploration of fur bearing animals. The Innu, together with the Cree, are part of a linguistic and cultural continuum stretching from Labrador west to the Rocky Mountains. It is in the interior trapping and hunting lands where bands and dialects have traditionally met and merged.

According to Ives et al. (1976) deglacation and final drainage of glacial lakes would have been completed by about 6,000 years ago, leaving the topography and water levels much as they are today. Within the study area bedrock is of the Churchill (sedimentary, metamorphic and intrusive) and Grenville (quartzofeldspathic gneisses) Provinces (Greene 1974). The study area is characterized by deep till and glaciofluvial deposits. Eskers and drumlin ridges are common, while organic terrain (string bogs) and bedrock outcrops do not often occur. The study area falls within three ecoregions (M, S and Q) as described by Lopoukhine et al. (1978:42-54) in Northland Associate's biophysical report (1985:9-13) on the Tote Road.

St. Martin and Theberge (1985:42-44) in their study of the Lac Joseph Caribou Herd identified the waterfowl and mammal species of the study area. Birds and mammals were the basis of subsistence pursuits during the prehistoric and historic times, their availability often determining band size and settlement location. Fish, a food resource which, because of preservation, often disappears from the archaeological record, was equally important in past lifeways. LGL Limited (1985:3-4) identified the fish species of the study area.

4.0 APPROACH: IMPACT IDENTIFICATION

Impact identification and assessment are defined in the "Historic Resources Impact Assessment Guidelines" (1982:21-22) and are summarized here.

An historic resource impact may be broadly defined as the net change between the condition or integrity of an historic site 'with' and 'without' the proposed development project. This change in condition or integrity is usually adverse but can be beneficial. These impacts apply to prehistoric, historic and palaeontological sites.

4.1 Adverse Impacts. Adverse impacts occur under conditions that include:

- destruction or alteration of all or part of an historic site,
- isolation from its natural setting, and
- introduction of physical, chemical, visual, audible, or atmospheric elements that are out of character with the historic resource and its setting.

Adverse impacts can be more specifically defined as either direct, indirect or potential.

4.2 Direct Impacts. Direct impacts are the immediately demonstrable effects of a project which can be directly attributed to particular land modifying actions. They are directly caused by the development project or its ancillary facilities, and occur at the same time and place. An example would be the destruction or major disturbance of a site during bulldozing (blade down).

4.3 Indirect Impacts. Indirect or secondary impacts result from activities other than actual development actions. Nevertheless, they are clearly brought about by the development project, and would not occur without it. Indirect impacts will normally occur at the same time as the development, but not necessarily in the same immediate area. For example, the accelerated erosion of an historic site resulting from alterations in normal flow patterns downstream from the development site would constitute an indirect impact. Increased vandalism of historic sites, resulting from improved or newly introduced access, would also be considered an indirect impact.

4.4 Potential Impacts. Potential impacts may occur either as a direct or indirect result of a development project. However, unlike direct or indirect impacts, potential impacts are removed in time and possibly in distance from the project. In other words, although potential impacts occur as a result of a project, and are predictable, they are not immediately evident.

Potential impacts normally occur in relation to other factors, particularly socioeconomic changes in an area. Changes in land use patterns or population density, such as increased urban or industrial development, intensification of farming, or increased recreational use, are sources of potential adverse impact on historic sites.

4.5 Beneficial Impacts. Beneficial impacts occur whenever a proposed development action actively protects, preserves, or enhances an historic resource. For example, a development action may have a beneficial impact by removing or lessening natural erosion of a site for future use, by covering it with a protective layer of sand or fill. In other cases, the public or economic significance of a heritage site may be enhanced by a development action which facilitates or encourages its non-destructive public use. Beneficial impacts are not frequent.

5.0 APPROACH: FIELD AND LABORATORY METHODOLOGY

Twelve days were spent in the field by the author and native field assistant, Mr. Alexander Andrew; 11 days were spent in archival research in the preparation of a Montagnais-Naskapi bibliography and 12 days were spent in report writing. Two historic resources evaluations (Thomson 1983; 1984) of the first 68 km of the Tote Road, exempted from the full environmental impact assessment process, form part of this reports methodology.

Thomson (1984:8) developed two hypotheses to aid in site prediction and evaluation. His hypothesis 1 views this part of the Labrador peninsula as rich in fur-bearers and mammals which would have attracted man both prehistorically and historically. Vantage points, such as eskers and river crossings would have been occupied by man and such areas within both corridors would be impacted by construction. Hypothesis 2 suggests that marginal resources would have kept the Innu out of the study area until the time of European contact when a market was created for fur, and supplied trade goods enabled man to survive in this harsh environment. Both these hypotheses fall within the focus of subsistence-settlement archaeology which assesses the relationship between man (prehistoric and historic) and his environment: the effect of the environment on the evolution of cultural systems, the impact of man on the environment, and the interaction of the two.

Informant interviews were not undertaken as part of this component study. The native land use component (Tanner and Armitage 1985) was expected to conduct informant interviews concerning past and present native use within the study area. They did conduct interviews at Sheshetshiu, however Innu there made only marginal use of the study area. At Sept-Iles/ Malistenan, Mingan and Schefferville, where most of the interviewing work was planned, they failed to get permission from any of the three band councils or from the regional status

Indian association, the Conseul Attikamik - Montagnais (CAM) to interview informants. No attempt was made to gather information from white trappers in Wabush, Labrador City or Churchill Falls. No individual or group presented any information concerning sites to those present at both sets of information sessions conducted by the proponent.

The national site inventory was searched, topographic maps were studied, and Mr. Jim Bouzanne of Northland Associates screened aerial photographs for possible site locations. Both exemption studies by Mr. Callum Thomson were reviewed.

5.1 Land Use

According to Tanner and Armitage (1985) the study area is now for the most part, within the territory of the Sept-Isles and Schefferville bands, with a small part of the southeastern extreme of the area falling within the area of the Mingan band.

The Sept-Isles band is the coalescence of an original Moisie River group with a number of bands (families) formerly associated with interior regions of the Labrador peninsula. During the 1800s the Ashuanipi and Menehik bands became part of the Sept-Isles band (Hind 1863) and later the Petitsikapau, Michikamau, Keniapiskau and parts of the Nichicun group were added (Figure 2). During the late 19th and early 20th centuries these interior groups, because of the closure of interior trading posts, were forced to the coast at Sept-Isles, North West River and elsewhere (Speck and Eisely 1942).

FIGURE 2 QUEBEC-LABRADOR BANDS. (after Speck 1931)

The Sept-Isles group continued, during the 1920s, to "hunt and trap up the Moisie River and east of it to Menigan and Attikenak Lakes, from the coast to the headwaters of the Hamilton (Churchill) River beyond to the height of land" (Speck 1931:585). It was this group which returned to the interior of Schefferville (Knob Lake) in the 1950s with the advent of iron ore mining in the region. Some of the Innu who used the study area historically became part of the Sheshatshiu band either through marriage or perceived economic gain from the trading post there.

A review of ethnographic, historical and exploration literature dealing with this part of Labrador suggests a marginal occupation, at least during the historic period. However, one has to keep in mind that a dearth of literature exists concerning man in this region. If it were not for the travels of Hind (1863) and Low (1897) and the ethnographic work of Speck (1931) such literature would be practically non-existent, likewise few archaeological surveys have been undertaken in the interior. Donald MacLeod (1967) found only four archaeological sites--two prehistoric and two historic--during a two month 800 km canoe survey of the Michikamau area--all of which were recently occupied by larger groups of Innu. An intensive survey of Indian House Lake (Samson 1978), a couple of hundred kilometres northeast of the study area found 75 sites. Two thirds of these date to the last

century while 26 run the gamut of the 5000 years of prehistory. Thomson (1983:iii) found four archaeological sites during his assessment of the first 57 km of the Tote Road:

> one prehistoric artifact find site now obliterated by mining operations at Wabush and three historic sites of low cultural significance, one on top of a deflated esker (FfDq-1) and two near the shore of De Mille Lake (FgDp-1, 2).

During the assessment of 57 - 68 (Thomson 1984) only a small historic campsite (FgDn-1) near Lure Creek was located. He (1984:14) thought it to be the result of a single occupation by an Innu family during the past several decades: "No historic refuse was found in the vicinity and no lithic or other debitage was found in test pits or on the surface."

The archaeological reconnaissance of Rogers and Rogers (1948; 1950) and Rogers and Bradley (1953) in the region around Lakes Mistassini and Albanel, in south central Quebec, suggests a more intensive prehistoric occupation than yet discovered in Labrador. A three month archaeological survey in 1950 revealed 121 prehistoric sites and a 1953 survey found 30 prehistoric sites with (1953:140) "indications of nearly twice that many more." It is however the location of these sites at areas still frequented by the Innu that is of considerable interest. During their 1948 survey they observed (1948:85) that "prehistoric camps seemed to favor a northeastern exposure . . . Summer camps of the present day Indians have, as a rule, southwestern exposures." The exposures may be different but

> The Indian who roamed these woods in days gone by camped on spots which are still being used by his descendents today, as is shown by the fact that nearly half of the prehistoric camps that were found are still being occupied.

The 1953 survey of south-central Quebec revealed similar continuity of camp sites through time

> Seventeen of the prehistoric sites are also the sites of camps used by modern Indians, either in winter or when travelling through the country (Rogers and Bradley 1953:140).

Erosion (wave, current and ice action) was threatening the majority of the prehistoric sites which, possibly because they were summer camps, were located at water's edge.

6.0 INTENSIVE INVENTORY

Preliminary field reconnaisance of the proposed and alternate routes, involving a helicopter overflight of the study area, took place in July 1985. This overflight plus the two exemption reports (Thomson 1983; 1984) suggested that river crossings (i.e. where the corridor intersected or came close to lakes and ponds) would offer the highest potential for locating historic resources. These were examined in future field studies.

6.1 Sampling:

The corridor and the cut center line of the proposed route and the corridor of the alternate route were examined using a combination of random and judgemental sampling (Table 1). Judgemental sampling assumes that certain cultural and perhaps more importantly biophysical factors were responsible for influencing site distribution within the study area. Random

TABLE 1

SAMPLING STRATEGY

Proposed Route	Sampling Strategy
Km 68 -71	One test pit every 20 m
Km 75 - 80	" " " " 40 m
Km 85 - 90	" " " " 50 m
Km 100 - 103	" " " " 50 m
Km 155 - 160	Foot survey with judgemental sampling
Km 165 - 170	" " " " "
18 Stream crossings	Foot survey with judgemental test pitting
Two eskers	" " " " " "
One esker (at km 102)	One test pit every 50 m
Alternate Route	**Sampling Strategy**
Six stream crossing	Foot survey with judgemental test pitting
Two eskers	" " " " " "

Helicopter flying in study area	27 hours
Man days in study an study area	24 man days

sampling negates the personal bias of judgemental sampling and the combination of both is thought to provide a valid interpretation of past human activity.

A systematic sampling strategy was agreed upon by the principal investigator and the curator of archaeology and ethnology at the Newfoundland Museum. Within km 68 - 71 one test pit was dug every 20 m; in km 75 - 80 one test pit every 40 m; in km 85 - 90 one test pit every 50 m; in km 100 - 103 one test pit every 50 m and one test pit every 50 m on a transect of the esker. The center line from km 155 - 160 and the intersecting esker were foot surveyed, as were the five km from 165 - 170. This strategy of subsurface testing and foot survey tested 26 of the 55 km having a cut center line on the proposed route (Figure 3).

The proposed and alternate routes were overflown at least twice by helicopter, nearly one half of the cut center line on the preferred route was test pitted and foot surveyed. Eighteen stream crossings on the preferred and six on the alternate were investigated and sub-surface sampled. All eskers intersecting the corridors were foot surveyed and areas which seemed to have a high potential were subsurface tested. A total of 27 hours were spent in helicopter flying the study area and 24 man days were spent in the study area.

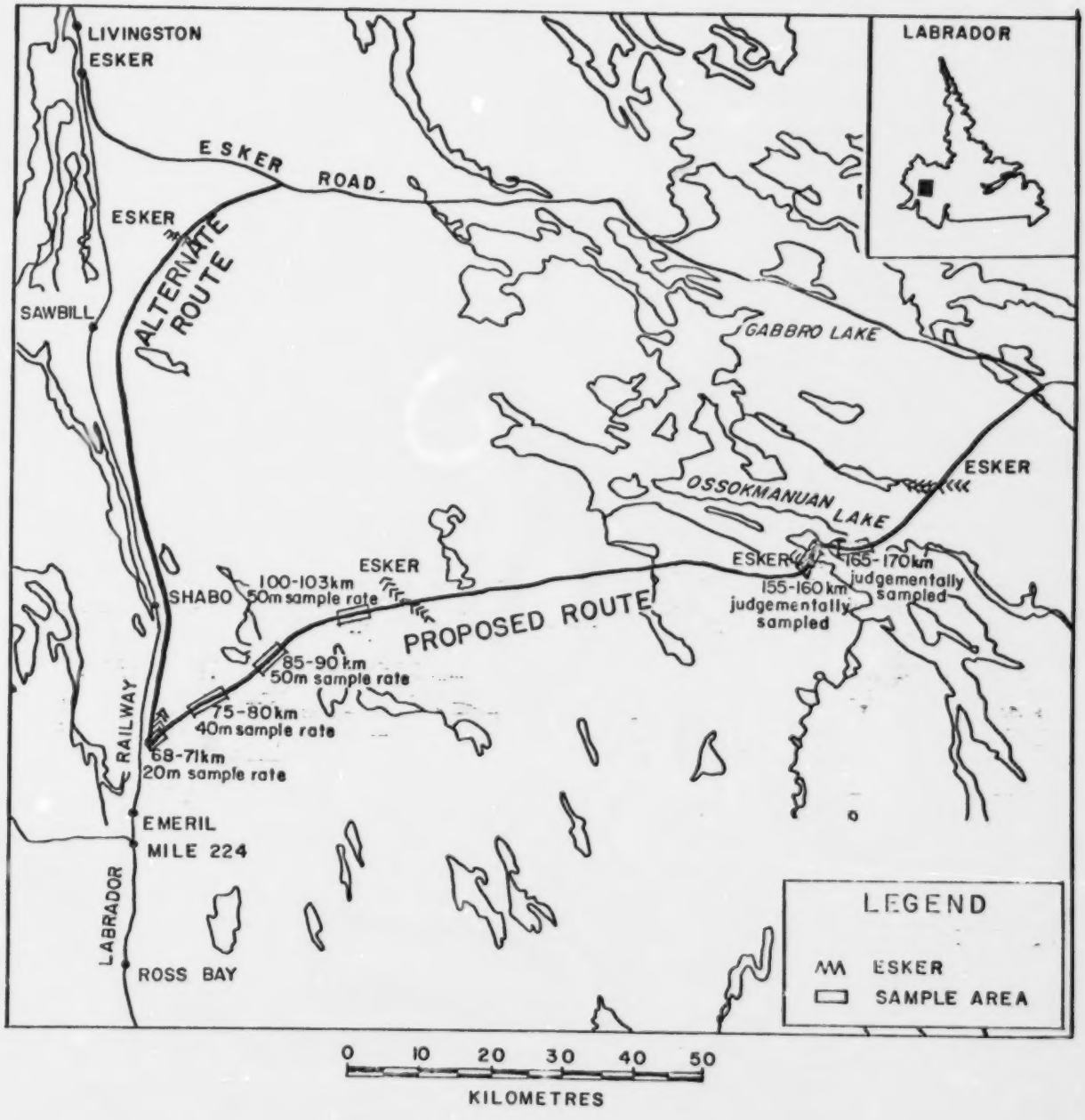


Figure 3 : Subsurface tested areas on the "Proposed Route-Tote Road."

Working in coordination with LGL Limited, all stream crossings requiring assessment by the Department of Fisheries and Oceans were investigated by LGL and myself. Stream crossings on both routes were previously marked in the field by representatives of the Department of Transportation and Fisheries and Oceans Canada.

All 24 stream crossings visited were surveyed by foot and test pitted (Figure 4). Prior to landing the helicopter a preliminary overview of stream crossings took place from the air. The three eskers which intersect the proposed route were foot surveyed and randomly sub-surface test pitted as were the two eskers which intersect the alternate route.

6.2 Survey Results

One historic site--a small recent campsite--was found at stream crossing number 14 on the proposed route (Figure 4), no prehistoric or palaeontological were found. The historic site is most likely the result of a single overnight occupation during the past couple of decades. No artifacts, except a wooden stand used to set a camp stove on, were found in the vicinity, and no iron or lithic debitage was found in test pits or on the surface.

At stream crossings 3, 4, 12, 13, 14, 16 on the proposed route there is secondary evidence of man in the form of tree

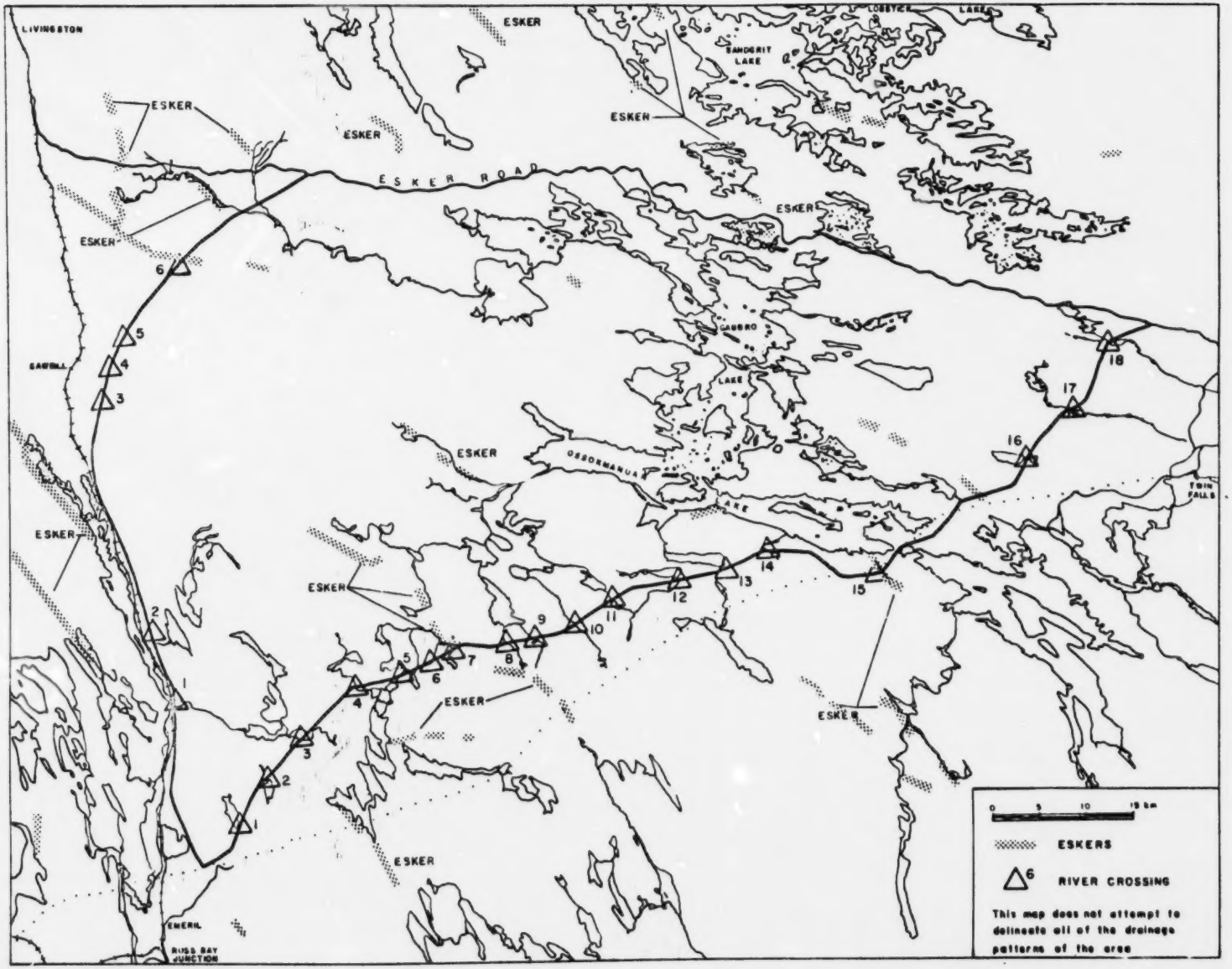


FIGURE 4 River Crossings - Proposed and Alternate Routes - Tote Road.

cuttings. These are the possible result of dead fall trap construction, portages, fire wood gathering or some combination thereof. Likewise on the alternate route tree cuttings were observed at crossings 1, 2, 3 and 4 again resulting from the above described activities. None of these cuttings appear recent and may date as early as the first quarter of this century, but it is difficult to date such evidence.

7.0 PREDICTION OF IMPACTS

7.1 Concerns during Construction

The number one concern during road construction is the possible direct or indirect destruction of a prehistoric site. Such sites because of their antiquity are not so visible as historic sites which are often distinguished by clearings, structural remains and other visible evidence of man. Notwithstanding that no prehistoric site was located in any of the test areas along the proposed or alternate route of the Tote Road, construction worker surveillance is recommended.

Because the road is to be an in-fill type of construction with close cutting retaining the roots of the existing vegetation little excavation is planned. The three major eskers on the proposed route and two on the alternate will be mined for in-fill materials, and major construction camps will be located there. Eskers, because of their limited vegetation cover, are easier than most interior locations to survey and any historic resources which they may contain are more readily visible to both the trained and un-trained eye.

Impacts on historic resources are, however, seasonal in this part of Labrador and are more likely to occur during the summer months than during winter when snow and ice will protect sites.

Irregardless of whether the road is (a) a seasonal road operated in the summer only, (b) a year round open road or (c) a year round open road connected to major North American road arteries, the impacts on historic resources would most likely occur during the summer months, since snow and ice would protect sites in winter. The progressive result of the above three scenarios is primarily an increase in road traffic. This increase in traffic is not forseen as a direct primary impacting agent on the historic resources of the areas within either the proposed or alternate route. Any increase in seasonal and regional access leading to development of associated support facilities and their possible impact on historic resources are addressed in present legislation (see below).

7.2 Concerns - Two Years After Construction

Impact concerns during this period are thought to be of an indirect or secondary type. Indirect impacts are those which expose sites to disturbance at a later time, for example, when the clearing of vegetation along the right-of-way uncovers sites and leaves them vulnerable to collectors and vandals. A site could also be eroded downstream as a result of the alteration in the normal flow pattern of a river. Increased recreational use especially all terrain vehicles is another concern.

7.3 Concerns - Ten Years After Construction

During the post construction phase highway maintenance will entail the continued excavation of borrow pits, possible road re-alignments and the seasonal repair of bridges and culverts at stream crossings. The possible impacts associated with highway maintenance will continue as long as the highway is in operation and could possibly intensify if the road's status changes from that of a seasonal tote road.

Although the construction of support facilities (service stations, motels, fishing lodges, etc.) along the chosen route are governed by existing Crown Lands Legislation, their potential negative impact on historic resources are thought to be a legitimate post-construction concern. Subsequent human activities centred at these locations could endanger sites by vandalism or artifact collecting.

8.0 MITIGATION

No unavoidable adverse impacts on historic resources are known within the corridors of the proposed or alternate routes of the Labrador Tote Road. The one historic site located at river crossing number 14 on the proposed route is of such recent vintage and so briefly occupied that no mitigation action is recommended.

9.0 MONITORING

Section 10(1) of the Historic Resources Act (1985) requires that any person who discovers an archaeological object must report its discovery (forthwith) to the Minister of Culture, Recreation and Youth. If the Minister suspects that the continuation of the activity which uncovered the specimen will impact a site he may issue a temporary stop order for a period of not more than 30 days and this order may be extended for another 60 days.

In order to prevent such an occurrence during the construction of the Tote Road education seminars dealing with historic resources are recommended for the management and workers of the successful contract bidder. In the event that an environmental monitor is hired to oversee this project then that person should be made aware of historic resources legislation and the line of communication to follow if a site were discovered during the construction period.

It is possible that there may be more than one contractor working this road over the period of its construction so provisions should be made to provide the education seminar again upon the change of contractors.

TABLE 2

SUMMARY TABLE

Concerns applicable to all three Tote Road scenarios: (a) a seasonal road operated in the summer only,
(b) a year round open road and
(c) a year round open road connected to major North American road arteries.

Concern/Impacts	Comment, i.e., indicator of change most affected and severity and how much change	Mitigation measures proposed	Monitoring proposed
During Construction			
Concern 1	1. A prehistoric site or sites could be discovered during construction	Information to be passed on to Historic Resources Division	Historic Resources education seminars for construction workers and management
Post Construction (2 & 10 years)			
Concern 1 Concern 2 Concern 3	1. Indirect adverse impacts on sites (yet unknown) through increased recreational use 2. construction of support facilities 3. continued highway maintenance	Legislation (Historic Resources Act (1985) already in place	Reporting of newly discovered sites to Historic Resources Division

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12.0 ENVIRONMENTAL IMPACT ASSESSMENT ROSS BAY JUNCTION - CHURCHILL FALLS - TOTE ROAD

Terms of Reference for an Evaluation of Historic Resources

1. PREAMBLE

The Department of the Environment requires that the Department of Transportation undertake an assessment of the impact of the proposed Ross Bay Junction - Churchill Falls Tote Road on historic resources. During the months of 1984 and 1985 information on historic resources will be gathered on both the proposed and alternate routes through documentary research and informant interviews. On the proposed route, and to a lesser extent, on the alternate route the investigators shall carry out original field research to enable impact predictions to be developed and acceptable mitigative measures to be recommended.

2. LOCATION AND STUDY AREA

The proposed Ross Bay Junction - Churchill Falls Tote Road has two possible routes, a preferred route and an alternate route, shown in Appendix I.

3. THE STUDY

Historic resources shall be identified and evaluated along the surveyed centre line of the proposed route from a point approximately 7 km east of Ross Bay Railway Junction to the Brinco Road. The thirty (30) m wide right-of-way shall be

evaluated as well as up to five (5) km distance along eskers and major watercourses that intersect the route.

4. METHODOLOGIES

Informant interviews shall be conducted in such communities as Sept Isles, Sheshatshit, Lobstick, and Schefferville where Innu residents can provide information on the present and past land use patterns in the project area.

Field reconnaissance shall consist of aerially supported foot and water craft surveys of the proposed route and along major intersecting features such as watercourses and eskers which will be agreed upon with the Historic Resources Division. A program of random test pitting is to be established and agreed upon with the Historic Resources Division. A limited aerial supported foot survey of the alternate route shall be undertaken and along intersecting watercourses and eskers.

5. PREDICTION OF IMPACT

The investigators shall provide a detailed assessment of the impact upon historic resources by the project. Relative impacts on historic resources along the proposed and alternate routes will be described and discussed.

6. MITIGATION

The investigators shall provide an impact management proposal. Possible mitigative measures that could be used to reduce any impacts predicted in 5 will be discussed. The discussion must include a thorough review of the literature to

determine when, and in what circumstances mitigative measures have been used successfully in other road construction.

7. IMPACT MONITORING

The investigators shall recommend a monitoring program to determine the impacts on historic resources, if the impacts were predicted to have social and/or economic significance. Monitoring methodologies must be compatible with survey techniques to allow for a valid comparison of pre and post-impact conditions. Recommendations will be made to improve predictive capabilities.

8. REPORT

A final report will be made available by 1985 10 01 and it will be prepared in accordance with the Impact Assessment and Impact Management Guidelines as established by the Historic Resources Division (1982). The investigator shall maintain close liaison with the investigator responsible for the Native Resource Use Component Study.